

IN THE CLAIMS:

1. (currently amended) A treatment chamber for deactivating microorganisms in a fluid, the treatment chamber comprising:

a housing comprising a fluid inlet for receiving fluid to be treated and a fluid outlet for allowing treated fluid to be retrieved; and

a biconcave treatment zone coupled between the fluid inlet and the fluid outlet, the biconcave treatment zone defined by an electrode assembly within the housing, the electrode assembly comprising at least two non-cylindrical electrodes having opposing convex electrode surface sections for forming an electrode gap therebetween, wherein a continuous and substantially uniform electric field per unit cross section is generated by the application of a voltage pulse;

~~the electrode gap defining a biconcave treatment zone through which wherein the fluid, under influence of gravity, to flows through the biconcave treatment zone in a steady, uniform, non-turbulent manner, the biconcave treatment zone including the most intense electric field generated by the electrode assembly for treatment of the fluid; and wherein at least one of the opposing electrode surfaces controls the spatial distribution and dynamics of the flow of the fluid to be treated within the biconcave treatment zone.~~

2. (currently amended) The treatment chamber of claim 1 wherein the intensity of the electric field decreases in a smooth continuous decrease in intensity of electric field in either direction away from a mid section of the biconcave treatment zone when the voltage pulse is applied to the electrodes.

3. (original) The treatment chamber of claim 2, wherein one of the electrodes is an inner electrode and the other of the electrodes is an outer electrode, the outer electrode circumscribing the inner electrode.

4. (original) The treatment chamber of claim 3, wherein the convex section of the outer electrode is substantially toroidal and the convex section of the inner electrode is substantially ellipsoidal.

5. (original) The treatment chamber of claim 4, wherein the convex section of the inner electrode is substantially spherical.

6. (original) The treatment chamber of claim 3, wherein the convex section of the outer electrode comprises a plurality of adjacent substantially ellipsoidal surfaces and the convex section of the inner electrode is substantially ellipsoidal.

7. (original) The treatment chamber of claim 6, wherein the convex section of the inner electrode is substantially spherical.

8. (currently amended) The treatment chamber of claim 4, wherein the biconcave treatment zone is annular.

9. (currently amended) The fluid treatment chamber of claim 8, where the biconcave treatment zone comprises a zone inlet for receiving untreated fluid, a zone outlet for dispensing treated fluid, and a primary treatment zone for treating the untreated fluid, the primary treatment zone being located in the midsection of the biconcave treatment zone, between the zone inlet and the zone outlet.

10. (currently amended) The treatment chamber of claim 9, wherein a top surface of the inner electrode is configured to receive[[s]] the fluid from a fluid source and convey[[s]] it radially by overflow to circumfuse the surface of the inner electrode, thus introducing the fluid into the zone inlet and the primary treatment zone.

11. (currently amended) The fluid treatment chamber of claim 10, wherein the electric field's intensity gradually increases from the zone inlet towards the primary treatment zone and then decreases gradually from the primary treatment zone towards the zone outlet.

12. (original) The fluid treatment chamber of claim 10, wherein the inner electrode includes a fluid bore extending there through along its polar axis, the fluid bore being configured such that the treatment zone is in fluid communication with the fluid inlet.

13. (currently amended) The fluid treatment chamber of claim 12, wherein the inner electrode is substantially planar on its top surface and to facilitate[[s]] continuous, even and radial communication of the fluid from the fluid bore to the zone inlet.

14. (original) The fluid treatment chamber of claim 10, wherein the inner electrode comprises a depression on its top surface for receiving the fluid from the fluid source.

15-27. (canceled)

28. (currently amended) A pasteurization kit for treating a fluid comprising at least two non-cylindrical electrodes for generating an electric field therebetween, the electrodes having convex electrode surface sections configured such that when assembled in a housing, the convex electrode surface sections oppose each other and define therebetween a biconcave treatment zone for treatment of the fluid and one of the electrodes is configured such that the fluid will circumfuse its surface in order to be introduced into the treatment zone.

29. (currently amended) The pasteurization kit of claim [[26]] 28 further comprising the housing including a fluid inlet for receiving fluid to be treated and a fluid outlet for allowing treated fluid to be retrieved.

30. (currently amended) A fluid treatment chamber for use in the inactivation of microorganisms in fluids, the fluid treatment chamber comprising an electrode assembly having at least two non-cylindrical electrodes, the electrodes having opposing convex electrode surface sections forming an electrode gap consisting of a biconcave treatment zone wherein there is simultaneously produced:

a most intense electric field generated by the electrode assembly at its midsection;
a substantially uniform electric field per unit cross section of the treatment zone; and
a smooth continuous decrease in intensity of electric field in either direction away from the mid section of the treatment zone by the application of a voltage pulse.

31. (previously presented) The treatment chamber of claim 1, wherein at least one of the convex electrode surface sections is ellipsoidal.

32. (previously presented) The pasteurization kit of claim 28, wherein at least one of the convex electrode surface sections is ellipsoidal.

33. (previously presented) The fluid treatment chamber of claim 30, wherein at least one of the opposing convex electrode surface sections is ellipsoidal.

34 (previously presented) The fluid treatment chamber of claim 30 wherein the biconcave treatment zone comprises a biconcave annular space.